

USSR

UDC 669.295.046.43

VASYUTINSKIY, N. A., LYSTSOV, A. I., ZAKHAREVICH, A. A., and SIDORENKO, A. P.

"Some Specifics of Chlorination of Chunk Titanium Slag"

Sb. tr. Vses. n.-i. i proyekt. in-t titana, [Collected works of All-Union Scientific-Research and Planning Institute for Titanium], 6, 1970, 41-47, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971, Abstract No. 1 G179 by the authors).

Translation: During chlorination of chunk Ti-slag, a dense, gas-impermeable layer of rutile is formed, which retards the chlorination reaction. The kinetic curves for chlorination of chunk titanium slag show an autocatalytic period. It is assumed that the reason for the autocatalysis is an increase in the reaction surface resulting from development of microfissures in the chunks of Ti-slag. 3 figures; 8 biblio. refs.

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UDC 669.295.05

USSR

VASYUTINSKIY, N. A., LYSTSOV, A. I., ZAKHAREVICH, A. A., and SIDORENKO, A. P.

"Certain Features of Chlorinating Lump Titanium Slag"

Moscow, Metallurgiya i Khimiya Titana (Institut Titana), Metallurgiya Publishing House, Vol 6, 1970, pp 41-47

Translation: It is established that during chlorination of lump titanium slag, a solid, gas-proof layer of rutile is formed which slows down the chlorination reaction. The kinetic curves of chlorinating lump titanium slag are characterized by the presence of an autocatalytic period. It is suggested that the cause of the autocatalysis is the increase in the reaction surface through the development of microcracks in the lumps of titanium slag. Three illustrations and eight bibliographic entries.

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Titanium

USSR

UDC 669.295.046.43

LYSTSOV, A. I., VASYUTINSKIY, N. A., and CHUMAK, T. A.

"Chlorination of Titanium Slag Coated With Hydrocarbon"

Sb. tr. Vses. N.-i. i proyekt. in-t titana (Collection of Works of the All-Union Scientific Research and Design Institute of Titanium), 1970, 2, pp 37-43 (from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G147)

Translation: A study is made of the special features of chlorination of ground Ti-slag whose particles are coated with a hydrocarbon shell. Slag coated with sooty C, can be chlorinated just as well as a slag-coke mixture; slag coated with pyrolytic C cannot be completely chlorinated. A mixture consisting of coated C of the initial slag, can be well chlorinated. Briquettes produced from slag coated with pyrohydrocarbon can be chlorinated at almost the same rate as the ordinary briquettes. 6 ill. Author's abstract.

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1/2 025 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--CHANGE IN A TITANIUM SLAG DURING THE COKING OF BRIQUETS -U-  
AUTHOR--(04)-VASYUTINSKIY, N.A., LYSTSOV, A.I., BEREZHKO, A.V., SIDORENKO,  
A.P.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (1) 247  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--COKE, PETROLEUM PRODUCT, TITANIUM, METALLURGIC SLAG, PHASE  
ANALYSIS, THERMAL EFFECT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1988/0599 STEP NO--UR/0370/70/000/001/0247/0247  
CIRC ACCESSION NO--AP0105582  
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105582

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THREE TYPES OF TI SLAGS WERE  
STUDIED: NONOXIDIZED TI SLAG, ANATASE SLAG, AND RUTILE SLAG. THE  
EFFECT OF TEMP. (800-1200DEGREES) ON THE PHASE COMPN. OF THE BRIQUETS  
MADE FROM THE SLAGS AND PETROLEUM COKE WAS DETD.

UNCLASSIFIED

USSR

UDC 612.015.32+612.273

ZAKHAREUSKI, A. S., TANARYNA, N. Z., and LYSTSOVA, G. V.

"Carbohydrate-Phosphorus Metabolism in Hypoxia and Under the Influence of N,N-diethylaminoethylamid of p-Chlorophenoxyacetic Acid"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Biologicheskikh Nauk, No 1, 1971, pp 88-92

Abstract: Hypoxia was induced in white rats by ligation of the trachea. The rats were then frozen in liquid nitrogen, and the brain and liver were extracted and examined for adenosine triphosphate content, creatine phosphate, inorganic phosphorus, lactic acid, glucose, and glycogen. The examinations established that under the influence of hypoxia, the brain and liver content of adenosine triphosphate, creatine phosphate, glucose, and glycogen is decreased, and that of lactic acid and inorganic phosphorus is increased. The prophylactic administration of N,N-diethylaminoethylamid of p-chlorophenoxyacetic acid (IEM-455), an antihypoxia preparation synthesized in the Laboratory of the Synthesis of Medicinal Preparations at the Institute of 1/2

USSR

ZAKHAREUSKI, A. S., TAMARYNA, N. Z. and LYSTSOVA, G. V.,  
Izvestiya Akademii Nauk BSSR, Seriya Biologicheskikh Nauk, No 1,  
1971, pp 88-92

Experimental Medicine of the Academy of Medical Sciences USSR by  
N. A. Zakharova, in a dose of  $1/4$  LD<sub>50</sub> at different periods  
prior to the development of hypoxia prevented to a considerable  
degree the development of the carbohydrate-phosphorus metabolic  
disorders normally induced by hypoxia.

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USSR

UDC 616-001.28+616.12-073.97

CHAIWLYTKA, A. A., SIDARENKA, YA. R., RABTSEVICH, T. S., LUCHNIKOW,  
YA. F., LYSTSOVA, G. V., PLENINA, G. M.

"Cardiac Function During the Various Periods of Acute Radiation  
Sickness in Dogs"

Minsk. Vesti Akademiyi Nauk BSSR Seryya Biyalagicheskikh Nauk,  
No 1m 1970, pp 76-84

Abstract: A complete study of 92 dogs was made including behavior, weight, temperature, hemocytology, serum chemistry - including all its fractional components, A/G ratio, pulse respiration, EKG studies, etc., before irradiation with a single dose of 600 r and during the various phases of radiation sickness. A total of 41 controls and 50 dogs treated 7-9 days after irradiation were studied. As the animals died, autopsies were performed, and complete gross, histological and pathomorphological studies were correlated with other findings. Disorganization of cardiac function in the dead and surviving animals, together with electrocardiographic studies, were recorded concurrently with other clinical, laboratory, and

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USSR

CHAWLYTKA, A. A., et al., Minsk, Vesti Akademiyi Nauk BSSR, No 1,  
1970, pp 76-84

physiological changes. Histological studies in treated animals  
show the reversability of myocardial shifts with only minor sequelae.

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USSR

UDC 542.97:547.263:546.11:547.594.3

SHARF, V. Z., FREYDLIN, L. KH., KRUTII, V. N., LYSYAK, T. V., Institute of Organic Chemistry Imeni N. D. Zelinskii, Acad. Sc. USSR

"Investigation of the Homogeneous Hydrogen Transfer From 2-Pentanol to Cyclohexanone in the Presence of Tris(triphenylphosphine)-dichlororuthenium and a Base"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 72, pp 2195-2198

Abstract: Base accelerates the reduction of cyclohexanone through hydrogen transfer from 2-pentanol as well as its hydrogenation and condensation in presence of the tris(triphenylphosphine)dichlororuthenium complex. The hydrogen transfer reaches a maximum at a base concentration of  $1.64 \cdot 10^{-3} \text{M/l}$  under argon atmosphere and at  $4.08 \cdot 10^{-3} \text{M/l}$  under hydrogen. The degree of hydrogenation of the ketone by hydrogen and its condensation increase with increasing concentration of the base. Raising the temperature from 50 to  $840^\circ$  results in a higher rate of hydrogen transfer; the rate of hydrogenation reaching a maximum at  $70^\circ$ . This evidently is due to the formation of various intermediate complexes catalyzing these processes. The duration of the process has practically no effect on all of the processes discussed.

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USSR

UDC 621.316.722.1 (088.8)

GORBACHEV, B.V., LYSYAKOV, YU. M.

"Continuous-Key D-C Voltage Regulator"

USSR Author's Certificate No 259180, filed 19 Sept 68, published 5 May 70 (from RZh-Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B548P)

Translation: The circuit of a d-c voltage regulator is proposed, in which parallel operation of a transistorized regulator with continuous control, and a key [klyuch] transistor with a thyristor key is used, which differs in the fact that both regulators are fed from one power supply. A resistor--load-current pickup [datchik] of the continuous regulator is connected to the collector circuit of the control transistor of the continuous regulator. Voltage from the pickup controls the threshold device, which in one condition includes one of the blocking generators, and in second condition includes the second blocking generator. The first blocking generator includes the gate circuit of the thyristor operating as a key control element. The second blocking generator includes the gate circuit of the second thyristor, which together with a capacitor forms the quenching circuit of the power control thyristor. Thus, modulation of the duration of the key regulator is accomplished. 1 ill. B.D.

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USSR

UDC 612.8+612.766.1

NAVAKATYKYAN, O. O., KUNDIYEV, Yu. I., ~~LYSYNA, G. G.~~ BUZUNOV, V. P.,  
HRYSHKO, F. I., DERKACH, V. S., KAPSHUK, O. P., KYRYENKO, A. Ye., KARAKASHYAN,  
A. N., KOVAL'OVA, G. I., RATUSHNA, A. M., TOMASHEVC'KA, L. I., NAGORNA, A. M.,  
and MAYDYKOV, Yu. L., Kiev Institute of the Work Hygiene and Occupational  
Diseases, Kiev

"Nervous Emotional Stresses as a Problem of Modern Work Physiology"

Kiev, Fiziologichnyy Zhurnal, Vol 18, No 4, Jul/Aug 72, pp 535-546

Abstract: The introduction of machines and automatic control instrumentation into production lines at plants and factories and at many other institutions requires of workers rapid coordination of actions combined with mental activity. The volume of information input which requires a combination of physical and mental ability has been increasing tremendously for the last decade. This has produced nervous and emotional stresses and disturbances in the normal functions of many human organs. Analysis of many workers from various branches of industry as well as people occupied with mental work has shown that modern technology imposes heavy stresses on an individual which are accompanied by abnormal function of the adrenal glands, and hypothalamus, and the hypophyseal and sympatho-adrenal systems. Measurements have shown that corticosteroid blood and urine

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NAVAKATYKYAN, O. O., et al., Fiziologichnyy Zhurnal, Vol 18, No 4, Jul/Aug 72, pp 535-546

levels exceed the norm by as much as 42-57% in people under heavy stress. Emotional stress with distortion in the function of many systems were more often encountered among the young (17-18 year olds). These malfunctions included the secretion of adrenalin and noradrenalin, and disturbances in hemodynamics. Shifts in physiological functions among different occupational groups under identical stresses occur at different times and are closely related to age. They were more pronounced among older people (31-40 years old). The cardiovascular system occupies a prominent place in labor physiology, and there are many methods and approaches to study it. Some literature methods and those of the authors are described, including instrumentation. Mental work which is accompanied by nervous-emotional stresses influences profoundly the cardiovascular system within a wide range of deviations, including pathological functional disturbances and hypertension. The same is true for other occupations as well. The authors recommend the rational use of working hours and rest periods to avoid overstresses.

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1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--CATALYTIC PYROLYSIS OF A GAS CONDENSATE FROM THE SHEBELINSKI  
DEPOSIT -U-  
AUTHOR--(04)-LYSYKH, O.V., PAUSHKIN, YA.M., ADELSON, S.V., PANDVA, I.YU.  
COUNTRY OF INFO--USSR  
SOURCE--GAZOV. PROM. 1970, 15(3), 44-7 (RUSS)  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, EARTH SCIENCES AND OCEANOGRAPHY  
TOPIC TAGS--PYROLYSIS, ALKANE, NAPHTHENE, ETHYLENE, BUTADIENE, CATALYST,  
NATURAL GAS, PETROCHEMISTRY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3002/1122 STEP NO--UR/0492/70/D15/003/0044/0047  
CIRC ACCESSION NO--AP0124549  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128549

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CATALYTIC PYROLYSIS AT 760-850DEGREES OF THE 53-125DEGREES FRACTION OF SHEBELINSKII GAS CONDENSATE WAS EXAMD. THE PYROLYSIS FEED HAD 0. 0.743 G-CM PRIME3 AND CONTAINED 40.9 WT. PERCENT PARAFFINS, 51.7 WT. PERCENT NAPHTHENES AND 7.4 WT. PERCENT AROMATICS. THE OPTIMUM FEED-STEAM WT. RATIO WAS 2.2:1. THE MAX. YIELD OF ETHYLENE (36.4 WT. PERCENT) WAS AT 850DEGREES AND SPACE VELOCITY 0.93 HR PRIME NEGATIVE1, AND THE MAX. OF BUTADIENE (8.35PERCENT BY WT.) AT 800DEGREES AND SPACE VELOCITY 2 HR PRIME NEGATIVE1. THE CATALYST COMPN. IS NOT GIVEN. FACILITY: MINKHGP IN. GUBKINA, MOSCOW, USSR.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--CYTOPHOTOMETRIC DETERMINATION OF DNA IN PLASMOCYTIC NUCLEI OF THE  
SPLEEN IN RATS WITH HORMONE DEPENDENT TUMORS -U-  
AUTHOR--(05)-UMANSKIY, YU.A., ANTONYUK, R.D., GUDIMLEV KOVICH, K.A., LYSYUK,  
L.P., ULYANOVA, T.N.  
COUNTRY OF INFO--USSR

SOURCE--VOP. ONKOL. 1970, 16(5), 61-5

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DNA, SPLEEN, RAT, TUMOR, HORMONE, SPECTROPHOTOMETRIC ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605007/F07 STEP NO--UR/0506/70/016/005/0061/0065

CIRC ACCESSION NO--AP0139929

UNCLASSIFIED



2/2 022

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0139929

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FEMALE RATS (STRAIN WISTAR) WERE CASTRATED AT AGE 2 MONTHS AND A PART OF THE OVARY WAS IMPLANTED IN THE SPLEEN. IN 10 MONTHS AFTER THE IMPLANTATION, TUMORE OF VARIOUS LOCALIZATION AND SIZE DEVELOPED; THE RATS WERE THEN KILLED AND THE DNA CONTENT IN THE NUCLEI OF PLASMATIC CELLS OF THE SPLEEN WAS DETO. CYTOSPECTROPHOTOMETRICALLY. THE DNA CONTENT DEPENDED ON TUMOR LOCALIZATION WITH RESPECT TO THE SPLEEN. IN THE CONTROL ANIMALS, ANIMALS WITH TUMORS IN THE SPLEEN, ANIMALS WITH TUMORS DEVELOPED IN OTHER ORGANS BUT NOT IN THE SPLEEN, AND ANIMALS IN WHICH TUMORS DID NOT DEVELOP, THE DNA CONTENT IN EACH NUCLEUS OF SPLEEN PLASMATIC CELLS WAS 2.84, 2.41, 5.09, AND 5.72 ARBITRARY UNITS, RESP. FACILITY: RES. INST. EXPTL. CLIN. ONCOL., KIEV, USSR.

UNCLASSIFIED

AA0040741

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent,

241695 ALUMINIUM ELECTROLYSER MANIPULATOR comprises  
a portal frame 1, three hoppers 2 for the  
anode mass, swing chutes 3 for feeding, and four  
hoppers with swing chutes 5 for silica. Two units  
for electrolyte skin breaking, filler units, control  
cabin 9, current collector 11, pumping station and  
separate traction drive are also installed. The  
unit travels close to the battery of electrolyzers  
16

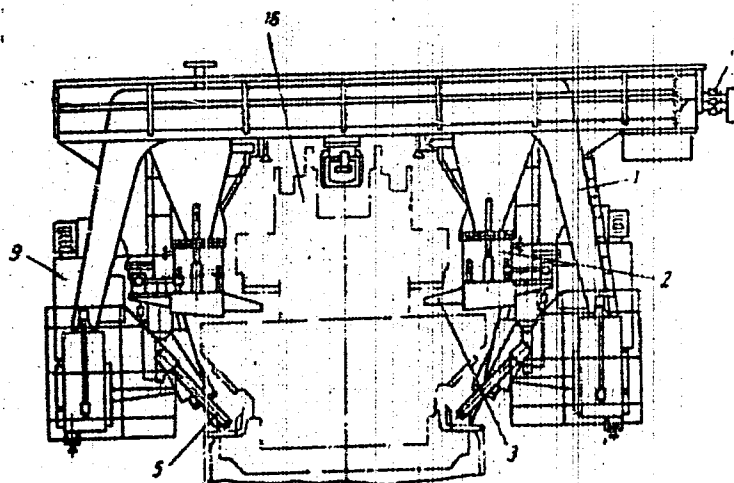
1.2.68 as 1216173/22-1. Z.B.VOLODARSKI et alia.  
(25.8.69.) Bul 14/18.4.69. Class 40c. Int.Cl.C 22d.

AUTHORS: Volodarskiy, Z. B.; Lysyy, I. S.; Starosvetskiy, D. L.;

Znak, V. M.; and Deniso, V. A.

19750410

AA0040741



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19750411

LD

USSR

UDC 621.317.7.087.92-932

DIDENKO, K. I., LASKAVYY, V. N., LYSYY, L. T., CHIREPAKHA, A. K.

"Convertor of Frequency Signal to Amplitude Signal"

USSR Author's Certificate No 290440, Filed 7/08/69, Published 12/04/71,  
(Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11, 1971, Abstract No 11 A185 P from the Resume).

Translation: A device which converts a frequency signal to an ac amplitude signal is suggested, containing a condensor frequency convertor. In order to increase the accuracy and simplify the device, it contains an additional transformer, the primary winding of which is connected to an ac voltage supply of constant frequency, while the secondary winding is connected in series with the power supply of the convertor. 1 Figure.

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Acc. Nr:

AP0049849

Abstracting Service:

CHEMICAL ABST. J-70

Ref. Code:

21R0032

LYSVY P.A.

101290m Apparatus for studying the wear of polymer materials during reciprocation. Severin, P. A.; Studnikov, M. T.; Lysvi, P. A.; Fedorenko, V. V. (Inst. Khim. Vysokomol. Soedin., Kiev, USSR). Zavod. Lab. 1970, 36(1), 101-3 (Russ). The title app. for studying the wear resistance of plastics during reciprocating friction along metals at low and high temps. in various gas media, is described. The app. is suitable for use at operating loads and speeds of many reciprocating engines. The driving motion and application of load on the samples are accomplished on one side (vertically), while the samples acquire reciprocating motion along the arc of a ring-shaped countershaft. This permits one to achieve quite simply the necessary insulation of the friction block from the surrounding medium. The app. was used to test samples of filled Fluoroplast-4 at various temps. and sliding velocities over a broad range of loads. DBJR

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REEL/FRAME  
19801774

USSR

TODOROV, D. N., LYSYY, S. T., KAPATSYNA, G. G., KHANBEKOVA, N. S.

"Input Language for Graphic Information Processing System"

Prikl. Mat. i Programmir. [Applied Mathematics and Programming -- Collection of Works], No 8, Kishinev, Shtiintsa Press, 1972, pp 122-138 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V675).

Translation: The GRAFIK input language for computer and plotter software systems is described. The language includes geometric operators (cycle, turn, shift, symmetry, transform, calling of subroutine) and fragments (point, line, inscription, function, pen, linear and angular dimensions). The language also includes ALGOL-60 operators: attachment and transfer. An example of a program written in GRAFIK is presented.

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USSR

UDC 519.21

LYTKIN, I. P.

"Construction of Optimal Stabilization Systems with Random Perturbations"

Nelineyn. i Optimal'n. Sistemy [Nonlinear and Optimal Systems -- Collection of Works], Moscow, Nauka Press, 1971, pp 173-181, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V143).

NO ABSTRACT.

UDC 612.115+797.57

USSR

GVOZDEV, P. I., ~~LYTKIN, M. I.~~, and MOZZHUKHIN, A. S., Military Medical Academy imeni S. M. Kirov

"Changes in the Coagulating and Anticoagulating Systems After Parachute Jumps"

Leningrad, Fiziologicheskii Zhurnal SSSR, No 10, 1971, pp 1,526-1,530

Abstract: Preparation for and completion of a parachute jump increases the heparin concentration, intensifies fibrinolysis, reduces the prothrombin concentration, and lengthens the recalcification time, i.e., parachute jumping induces hypocoagulability. These blood changes, which persist for more than 24 hours, are ascribed to conditioned reflex mechanisms that control anticoagulative activity. Under the influence of the stress of parachute jumping, heparin is released into the blood when the threshold concentration of thrombin is reached. Heparin then forms a complex compound with epinephrine which helps to decrease coagulation and prevent clotting. The more jumps an individual makes, the more pronounced the changes noted above. Training has the same effect on cardiovascular reactions of parachutists in the form of changes in arterial pressure and cardiac rate.

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USSR

UDC 532.517.4

BUKREYEV, V. I.; VASIL'YEV, O. F., Corresponding Member of the USSR Academy of Sciences; LYTKIN, Yu. M., Institute of Hydrodynamics, Novosibirsk

"Effect of the Shape of a Body on the Self-Modeling Characteristic of its Axially Symmetrical Trace"

Moscow, Doklady Akademii nauk SSSR, vol 207, No 4, 1972, pp 804-807

Abstract: The purpose of this paper is to examine the turbulent wake of a body of revolution surrounded by a current of an infinitely uniform incompressible fluid with a constant velocity in a direction parallel to the body's axis. If the Reynolds number is sufficiently large, it can be expected that at sufficiently large distances from the body, a self-modeling flow situation is established. A discussion of the results of detailed experimental research shows that the flow in self-modeling axially symmetrical wakes depends on the shape of the body as well as on the resistive force and the velocity of the incident flow. A description of the apparatus used for these experiments is given with the results presented in the form of curves. The authors express their gratitude to V. A. Kostomakhe and A. V. Gusev for making the measurements.

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USSR

UDC 532.517.4

LYTKIN, Yu. M.

"Turbulent Wake Behind a Cylinder of Noncircular Cross Section"

V sb. Dinamika sploshn. sredy. Vyp. 5 (Fluid Dynamics. No 5), Novosibirsk, 1970, pp 51-55 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 10B727)

Translation: The paper presents the results of measurement of the profiles of the mean velocity and intensity of turbulence at various distances from an elliptical cylinder at a flow velocity of 15 m/s and a Reynolds number of  $1 \cdot 10^4$ . Wires were cemented on the leading edge of the cylinder to produce a well-developed turbulent boundary layer on the surface of the cylinder. A comparison with known results for a circular cylinder shows that attainment of self-similar conditions in the investigated case is reached at shorter distances from the cylinder, which the author attributes to the position of the point of detachment of the boundary layer. The results may be described by previously known theoretical relations with appropriate choice of some empirical coefficient. V. A. Frost.

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USSR

UDC 621.385.032.11 → 621.52

SOLOV'YEV, A.V., TEREENT'YEV, G.G., BRUK, S.G., LYTKIN, YU. V., YEPIFANOV, V.N.,  
RUDIN, G.A.

"On The Use Of Type 'NORD' Magnetodischarge Pumps For Evacuation Of Microwave  
Devices"

Elektron. tekhnika. Nauchno-tekhn. sb. Tekhnol. i organiz. proiz-va (Electronic  
Technology. Scientific-Technical Collection. Technology And Organization Of  
Production), 1970, Issue 5(37), pp 57-60 (from RZh--Elektronika i yeye primenen-  
iye, No 2, February 1971, Abstract No 2A115)

Translation: Use of "NORD" magnetodischarge pumps with an evacuation rate of  
25 and 100 l/sec in the production of microwave tubes makes it possible to in-  
crease the average useful life of the devices and the rate of output of suitable  
devices (by 5%) in comparison with that occurring with use of oil methods of  
evacuation. A unique vacuum system of evacuation stations is created with ident-  
ical rectifier blocks, equal dimensions of vacuum ducts and arrangement of the  
manometer data units [датчик ]. For stable operation of the magnetodischarge  
pumps of the types indicated, it is necessary at monthly intervals to degas  
them at a temperature of 300--350° C (the NORD-100 for 5 hours and the NORD-25  
for 3--3.5 hours), and also reliably to guard against the entrance of oil from  
the forevacuum pump. 2 ill. 1 tab. 3 ref. G.B.

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1/2 026 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--EFFECT OF THE DEGREE OF TWIST ON THE PHYSICOMECHANICAL PROPERTIES  
OF VISCOSE CORD -U-  
AUTHOR--LYTKINA, M.B., TROSHKINA, YE.V.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. VOLOKNA 1970, (1), 44-6  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--RAYON, ELASTICITY, WEAR RESISTANCE, CORDAGE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1984/1810 STEP NO--UR/0193/70/000/001/0046/0046  
CIRC ACCESSION NO--AP0100384  
UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--11SER70  
CIRC ACCESSION NO--AP0100384  
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE STRENGTH, ELASTICITY, AND  
DURABILITY WERE DETD. OF RAYON CORDS MADE FROM FIBERS TWISTED 300-600  
TURNS-M INTO STRANDS THAT WERE AGAIN TWISTED AN EQUAL OR A DIFFERENT NO.  
OF TURNS. THE OPTIMUM PROPERTIES WERE OBTAINED WITH 400-80 TURNS-M,  
REGARDLESS OF WHETHER THE SAME OR A DIFFERENT NO. OF TURNS WAS USED IN  
THE PRIMARY (FIBER) AND THE SECONDARY (STRAND) TWISTING.

UNCLASSIFIED

USSR

NIKOL'S'KYY, V. V., and LYTUVN, V. P., Ukrainian Order of the Red Banner  
Agricultural Academy

"The Natural Resistance of the Animal Organism to Disease and Ways of In-  
creasing It"

Kiev, Mikrobiologicheskii Zhurnal, Vol 33, No 6, Nov/Dec 71, pp 781-782

Abstract: It was established in former work that in the early postembryonic life of calves, phagocytic defense reactions of the organism against infection predominate. Humoral factors of immunity develop later and immunological maturity is reached at an average age of 60 days. The rate at which supplemental immunological maturation takes place depends on the conditions under which the calves are kept. A study of the resistance to infection was carried out on calves of the Aberdeen-Angus breed during their acclimatization in the Ukrainian Poless'ye. The immunological reactivity of Aberdeen-Angus calves fed by one-year old mother cows was superior to that of calves of the black-spotted breed and of mixed breeds. There was a direct relationship between the rate of growth of calves of different breeds and the immunological reactivity. During the first 5-8 days of life all calves exhibited well-developed cellular protective functions manifested in active phagocytosis

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USSR

NIKOL'S'KYY, V. V., and LYTVYN, V. P., Mikrobiologicheskii Zhurnal, Vol 33, No 6, Nov/Dec 71, pp 781-782

of E. coli by polynuclear leukocytes, while the bactericidal activity of the blood was weak. The immunological reactivity evinced by a higher degree of bactericidal and bacteriostatic activity of the blood increased with the age of the calves, reaching its maximum at the age of 6 mos. The immunological reactivity depended on the season and the feed received by the calves. In May, when green feed was included in the ration, the phagocytic and bactericidal activity of the blood of calves increased significantly. In Jun-Aug, the blood sera of the animals stopped completely the growth of E. coli in agar after 4-24 hrs of contact with the cultures. Low winter temperatures combined with a high humidity lowered the immunological reactivity of the calves. The content of gamma-globulin in the blood serum of Aberdeen-Angus calves was higher up to the age of 7 mos than that in the serum of calves of the other breeds studied.

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USSR

UDC 518.1

SHESTOPALOV, V. P., Corresponding Member of the Academy of Sciences Ukrainian SSR, LYTVYENKO, L. M., and PROSVIRNIN, S. L., Khar'kov State University

"Method of Successive Approximations for Numerical Solution of Fredholm's Integral Equations of Second Kind"

Kiev, Dopovidi Akademii Nauk Ukrain's'koi RSR -- Seriya A. Fizyko-Tekhnichni ta Matematychni Nauky, No 4, Apr 73, pp 353-357

Abstract: A previous article by L. M. LYTVYENKO described a method for the solution of an infinite system of algebraic equations of the second kind, in which preliminary inversion of part of the operator is used to construct a convergent iterative process. In the present article a similar method of successive approximations proves effective for the numerical solution of Fredholm's integral equations of the second kind, especially with an infinite interval of integration. The method is substantiated and tested for the integral equation in the problem of electromagnetic wave diffraction by a slit in a metal screen. The method makes it possible to obtain a numerical evaluation of the error of solution and a substantial decrease in the interval of integration by replacing the original integral equation at each approximation stage with an equation with some new free term, whose value at each point of the domain of definition of the sought function can be found by numerical

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USSR

SHESTOPALOV, V. P., et al., Dopovidi Akademii Nauk Ukrain's'koï RSR -- Seriya A. Fizyko-Tekhnichni ta Matematychni Nauky, No 4, Apr 73, pp 353-357

integration. The possibility of narrowing the interval of integration is especially important in the case of infinite intervals, making it possible to use the degenerate kernel method to construct the resolvent of the integral equation and evaluate the error of solution of the integral equation at each approximation stage. If the integral equation is replaced by a finite system of linear algebraic equations for computer-aided realization of the method, the order of this system can be considerably lowered by reducing the interval of integration and performing only one inversion of the matrix, since the same inverted matrix is used in all subsequent iterations.

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USSR

UDC 519.21

LYTVYNOV, O. M., and REPIN, I. I., Institute of Mathematics, Academy of Sciences  
Ukrainian SSR

"On the Closeness of the Distribution of Two Markov Sums of Random Variables  
Without the Condition of Limiting Negligibility"

Kiev, *Dopovidi Akademii Nauk Ukrain's'koi RSR, Seriya A -- Fizyko-Tekhnichni  
ta Matematychni Nauky*, No 9, Sep 70, pp 774-777

Abstract: The article considers two successive series of random variables in which the successive sums in each sequence form a Markov chain. Instead of the condition of limiting negligibility, the closeness between the corresponding addends in the sums are given by means of pseudomoments, first considered by V. M. Zolotarev for the sums of independent random variables. A theorem is formulated which defines the conditions for the convergence of the two Markov sums of random variables without the condition of limiting negligibility, and on the basis of this theorem a theorem is formulated for the case of lattice distribution functions. Both theorems are analogs of Zolotarev's theorems for the case of Markov sums.

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USSR

UDC 536.24:536.423.1

ZEYLARNYK, Yu. A., LYTVYNOV, V. D.

"Inversion of Temperature During Boiling of Alkali Metals in Pipes Under Circular Flow Mode Conditions"

Teplofizika Vysokikh Temperatur, Vol 9, No 6, 1971, p. 1242-1247.

Abstract: An inversion temperature profile was observed in experiments on the study of heat transfer during boiling of alkali metals in pipes. It is concluded on the basis of the analysis performed that the most probable reason for existence of an inversion temperature profile is the lack of equilibrium between drops of liquid metal in the core of the stream and the temperature of the vapor. It is shown that significant superheating of drops is possible only with values of heat transfer coefficient from drop to vapor of about  $10^4$  kcal/m<sup>2</sup>·hr, °C.

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USSR

UDC 621.791.052.4.011:620.192.4:669.14.018.44

LAPTEV, A. A., LYUBALIN, P. M. (Candidates of Techn. Sciences), BELOTELOV, I. N., KULIKOV, F. R., and MANUYLOV, N. N. (Engineers)

"Certain Strength Characteristics of Weld Joints From VNS2 and VNS5 High-Strength Stainless Steels"

Moscow, Svarochnoye proizvodstvo, No 6, June 72, pp 29-31

Abstract: Argon-arc welding is widely used for welding structures from VNS2 and VNS5 high-strength stainless steels. It is not always possible, however, to heat-treat these structures after welding. Repeated heating in back runs may, therefore, affect the joint strength. The objective of this study was to rate the reliability of repaired structures in order to develop an efficient repair welding technology. Auxiliary welding without subsequent heat treating of argon-arc-welded butt joints from VNS5 steel markedly decreases their static strength. Welds from VNS2 steel are not affected to such an extent by auxiliary welding. Back runs of argon arc-welded butt joints from VNS2 steel substantially increase their susceptibility to cracking in blow-bending tests; this was not observed in joints from VNS5 steel. Surface plastic strain hardening of weld joints and weld-affected areas markedly increases the static strength of argon-arc

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USSR

LAPTEV, A. A., et al., Svarochnoye proizvodstvo, No 6, June 72, pp 29-31  
welded joints from VNS2 and VNS5 steels and their combinations. Hardening  
fully compensates for the drop in static strength caused by auxiliary  
welding. Hardening hardly affects the susceptibility of weld joints to  
cracking in blow-bending tests with the exception of weld joints made from  
VNS2 + VNS5 steels. (2 illustrations, 3 tables)

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biochemistry

UDC 577.3

USSR

FESENKO, Ye. Ye., KULAKOV, V. N., LYUBARSKIY, A. L., and VOL'KENSHTEYN, M. V.

"Three-Phase Kinetics of the Recombination of Myoglobin With Carbon Monoxide at Low Temperature"

Moscow, Doklady Akademii Nauk SSSR, Vol 205, No 2, 1972, pp 485-487

Abstract: A study of the recombination of myoglobin (Mb) with CO after photodissociation showed that the reaction proceeded via three pathways. These were designated as very fast, fast, and slow reactions. The energy, the entropy, and the enthalpy of activation were calculated for each reaction in both glycerine and a water-glycerine mixture. The rate constant and relative rates of reaction are given for selected temperatures between -100°C and 0°C. Conformational shifts in Mb·CO complexes were described.

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USSR

UDC 681.332.65

TURCHENKOV, V. I., and LYUBARSKAYA, I. D.

"Symmetrical Thyristor Commutator"

USSR Author's Certificate No 267691, filed 31 May 68, published 4 Aug 70  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 6,  
Jun 71, Abstract No 6 B249 P)

Translation: A symmetrical thyristor commutator circuit has been patented which can be used to include one of  $n$  AC voltage loads in logical circuits. Switching devices (commutators) with thyristors in the load circuit and a thyristor control pulse shaper are well known. When the controlling load pulse is fed, the loads are connected in series to the DC voltage source. However, it is impossible to use these devices for commutation of alternating voltage loads. The proposed device is distinguished from the well-known ones by the fact that the controlling pulse shaper in it contains a programmed unit and a flip-flop connected to the AC voltage source, with a secondary winding having a grounded midpoint and two output ends connected to two identical circuits. The latter consists of two diodes connected in antiparallel, the anode of one of which is connected via the resistor to the dynistor cathode, to the anode of which the cathode

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USSR

TURCHENKOV, V. I., and LYUBARSKAYA, I. D., USSR Author's Certificate No 267691, filed 31 May 68, published 4 Aug 70 (from RZh-Avtomatika, Tele-mekhanika i Vychislitel'naya Teknika, No 6, Jun 71, Abstract No 6 B249 P)

of the second diode, the capacitance, and stabilatron grounded by its second output are connected. The cathodes of the two dynistors consisting of identical circuits are connected to each other by n parallel circuits of two opposing diodes the cathodes of which are connected via the primary winding to the outputs of the program unit. This construction of the commutator permits any of the n loads to be connected to the AC voltage source according to the given program.

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USSR

UDC 621.892:546.77'22:621.793

KURILOV, G. V., UDOVENKO, V. F., YUKHNO, T. P., SENTYURKHINA, L. N., and LYUBARSKIY, I. M., Physicotechnical Institute of Low Temperatures of the Academy of Sciences UkrSSR, Char'kov

"Method for Investigation of Solid Lubrication Coats on MoS<sub>2</sub> Base"

Moscow, Zavodskaya Laboratoriya, Vol 39, No 1, 1973, pp 48-50

Abstract: A method was developed for the investigation of solid lubrication coats on MoS<sub>2</sub> base (All-Union Scientific Research Institute of the Petroleum Industry, VIII NP -209, -212, -213, -229, and -230) on friction under atmospheric conditions and in deep vacuum at low (-90-196 °C) and room temperatures. The gaseous products separating on friction were analyzed on the MSKh-3A mass-spectrometer located in the vacuum chamber. The

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USSR

KURILOV, G. V., et al., Zavodskaya Laboratoriya, Vol 39, No 1, 1973, pp 48-50

longevity of VNII NP -212 coat was found to remain unchanged in deep vacuum at room and low temperatures and its friction process is accompanied by separation of the same masses as at +25 °C. On friction of the VNII NP -212 coat with carbamide resin, close mass-spectrograms at low and room temperatures resulted. Two figures, one table, six bibliographic references.

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USSR

UDC 620.178.16:669.973

PRESNYAKOVA, G. N., LYUBARSKIY, I. M., UDOVENKO, V. P., MAR'YAK-HINA, YE. I., CHERNYAK, S. S., Physico Technical Institute of Low Temperatures, Academy of Sciences Ukrainian SSR

"Friction and Wear at Low Temperatures"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 3, 1971, pp 9-12

Abstract: The friction and wear of G13L steel with respect to 40Kh steel were investigated in a high vacuum ( $5 \cdot 10^{-7}$  mm Hg) and in air at room temperature and at  $-190^{\circ}\text{C}$ . Low-temperature vacuum manipulators made it possible to cool the samples to cryogenic temperatures, create normal loading, and transmit data to a measuring system outside the chamber. It was found that in the presence of friction in air and in a vacuum, low temperatures had no effect on wear for the indenters (steel G13L). For a ring (steel 40Kh), lowering the temperature in the atmosphere does not change the wear, but lowering the temperature with friction in a vacuum increases the wear sharply. The friction coefficient increases on lowering the test temperature in a vacuum; when testing in air, it is less than in a vacuum and is

USSR

FRESNYAKOVA, G. N., et al., Metallovedeniye i Termicheskaya  
Obrabotka Metallov, No 3, 1971, pp 9-12

independent of the temperature. The surface layer was strained  
in the presence of friction more intensely in a vacuum than in  
air.

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USSR

UDC 620.178.16:669.973

PRESNYAKOVA, G. N., LYUBARSKIY, I. M., UDOVENKO, V. F., MAR'YAK-HINA, YE. I., CHERNYAK, S. S., Physico Technical Institute of Low Temperatures, Academy of Sciences Ukrainian SSR

"Friction and Wear at Low Temperatures"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 3, 1971, pp 9-12

Abstract: The friction and wear of G13L steel with respect to 40Kh steel were investigated in a high vacuum ( $5 \cdot 10^{-7}$  mm Hg) and in air at room temperature and at  $-190^{\circ}\text{C}$ . Low-temperature vacuum manipulators made it possible to cool the samples to cryogenic temperatures, create normal loading, and transmit data to a measuring system outside the chamber. It was found that in the presence of friction in air and in a vacuum, low temperatures had no effect on wear for the indenters (steel G13L). For a ring (steel 40Kh), lowering the temperature in the atmosphere does not change the wear, but lowering the temperature with friction in a vacuum increases the wear sharply. The friction coefficient increases on lowering the test temperature in a vacuum; when testing in air, it is less than in a vacuum and is

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USSR

PRESNYAKOVA, G. N., et al., Metallovedeniye i Termicheskaya  
Obrabotka Metallov, No 3, 1971, pp 9-12

independent of the temperature. The surface layer was strained  
in the presence of friction more intensely in a vacuum than in  
air.

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Lubricants and Lubrication

USSR

UDC 669.36

SENTYURIKHINA, L. N., ~~LYUBARSKY, I. K.~~, KURILOV, G. V., UDOVENKO, V. F., and RUETSOVA, Z. S., Physico-Technical Institute of Low Temperatures, Academy of Sciences, Ukrainian SSR, Khar'kov

"Study of the Efficiency and Antifrictional Properties of Hard Lubricating Coatings in Atmospheric Conditions and in High Vacuum With Simultaneous Study of Gas Composition"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 6, No 4, 1970, pp 21-25

Abstract: Solid lubricants synthesized from MoS<sub>2</sub> and various film-forming agents were studied in atmospheric conditions and in high vacuum. It was shown that the efficiency of antifrictional properties of these materials depends to a large degree on air humidity and the depth of vacuum. The life expectancy of these coatings both in air and in vacuum depends on their chemical composition. Coatings with organic film forming agents -- urea-formaldehyde and epoxy resins -- performed for the longest period in air and in vacuum. Less durable were coatings from silicon-organic polymers, while coatings with inorganic binder were found to be more efficient in vacuum than under atmospheric conditions. The composition of the gas evolving during the friction also depends on the chemical composition of the film-forming agents.

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1/2 027 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--DEGASSING DURING FRICTION IN VACUUM -U-  
AUTHOR--(04)-GUSLIAKOV, A.A., ASHUKIN, A.V., KULEBA, V.I., LYUBARSKIY, I.M.  
COUNTRY OF INFO--USSR  
SOURCE--FIZIKO-KHIMICHESKAIA MEKHANIKA MATERIALOV, VOL. 6, NO. 1, 1970, P.  
106, 107  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--FRICTION, OXIDE FILM, METAL DEGASSING, VACUUM DEGASSING,  
BIBLIOGRAPHY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1995/0933 STEP NO--UR/0369/70/006/001/0106/0107  
CIRC ACCESSION NO--AP0116442  
UNCLASSIFIED



2/2 027

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0116442

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE KINETICS OF DEGASSING DURING DRY FRICTION IN VACUUM. THREE STAGES OF GAS SEPARATION WERE DISTINGUISHED, TWO OF WHICH CORRESPOND TO THE WORK IN PROCESS, WHILE THE THIRD CORRESPONDS TO STEADY STATE FRICTION. ON THE BASIS OF HYDROGEN DEGASSING DURING FRICTION, IT IS SUGGESTED THAT THESE STAGES CORRESPOND TO INITIAL BREAKDOWN OF THE OXIDE FILM, ITS ELIMINATION, AND FRICTION OF PURE SURFACES, RESPECTIVELY. FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR. FACILITY: FIZIKO-TEKHNICHESKII INSTITUT NIZKIKH TEMPERATUR, KHARKOV, UKRAINIAN SSR.

UNCLASSIFIED

Titanium

USSR

UDC 669.295:620.163.4

GRINBERG, N. M., OSTAPENKO, I. L., and LYUBARSKIY, I. M., Physicotechnical Institute of Low Temperatures of the Academy of Sciences UkrSSR

"Topography of Fatigue Failure of a Two-Phase Titanium Alloy"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, 1972, pp 45-48

Abstract: An experimental investigation was made of some characteristics of fatigue failure of a titanium alloy with a two-phase  $\alpha + \beta$  structure, alloyed with Al, Mo, V, Cr, and Fe, at temperatures from  $-140$  to  $+150^{\circ}\text{C}$ . Unlike the deformation of the single-phase alloy, the plastic deformation of the two-phase  $\alpha + \beta$  -titanium alloy by cyclic loading takes place as the result of slipping without twinning. The propagation of macrocracks by cyclic twisting proceeds in three stages: initial stratification on gliding planes by the action of normal stresses, intermediate zone stratification together with significant plastic deformation by the action of shearing stresses, and the final stage of quasi-brittle failure from normal stresses. With increasing temperature from  $-140$  to  $+150^{\circ}\text{C}$ , the intermediate zone decreases and the area of the zone of final failure increases proportionally. The character of micro-failure in the zones does not change. The initial stages of the

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USSR

GRINBERG, N. M., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov,  
No 8, 1972, pp 45-48

process of fatigue failure before developing microcracks result in increased  
durability at low temperatures. Three figures, eight bibliographic references.

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USSR

UDC: None

LEVIN, M. B., LYUBARSKIY, M. G., ONISHCHENKO, I. N., SHAPIRO, V. D.,  
and SHEVCHENKO, V. I.

"Nonlinear Theory of Electron-Beam Kinetic Instability in a Plasma"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62,  
No 5, 1972, pp 1725-1732

Abstract: In earlier papers on this subject the problem of the excitation of monochromatic plasma waves was solved for the case of an instability in the monoenergetic beam in the plasma. The present paper discusses the kinetic instability which arises in the interaction between the plasma and the beam, with the release of large quantities of heat. This instability is the result of the Landau attenuation effect; a formula is given for the linear increment of the increase in oscillation manifested by the instability. In their analysis, the authors use a system of equations describing the motion of the resonance particles in the wave field and the change in the wave amplitude due to the interaction with those particles, a system valid only if the phase change of the field as a result of that interaction is neglected. Plots are given of what the authors call the phase "mixup" of the resonance particles. Connected with the Physico-Technical Institute of the

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USSR

UDC: None

LEVIN, M. B., et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62, No 5, 1972, pp 1725-1732

Ukrainian Academy of Sciences, they thank Ya. B. Faynberg and R. Z. Sagdeyev for discussing the work with them, and Yu. M. Dnestrovskiy, D. P. Kostomarov, A. A. Ivanov, and T. Soboleva for their assistance in preparing it.

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USSR

UDC 621.394.4

BELYAKOV, A. A., LYUBARSKIY, V. YA., and ROMONOVA, N. A.

"Group Operation of Discrete Channels in a Data Transmission System"

Moscow, Elektrosvyaz', No 11, 1970, pp 67-73

**Abstract:** The authors consider a method for constructing group equipment for data transmission which would reduce the volume of hardware needed at central information processing stations. A block diagram is given for the group units ensuring the operation of parallel channels with noise-proof coding and automatic redemand of combinations accepted with errors. A diagram is given for the relationship between circulation time with respect to the operative memory unit and the maximal number of directions which can be serviced by group units under conditions of the single-digit method of processing accepted information. The number of directions increases two to three times by using a two or three digit method for processing accepted information. A diagram is also given for the distribution of the time of an operational memory unit among the various functional units within the direction processing cycle along with the block diagrams for the sending and receiving sections of units for coupling with the computer and the communication channels. Original article: six figures, two formulas, and three bibliographic entries.

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UDC 621.357.13:537.311.3

USSR

LYUBASHENKO, I. I. and TKACHENKO, V. D.

"Electrical Conductivity of Aluminophosphate Alloys Containing  $V_2O_5$  and  $Cr_2O_3$ "

Dopovidi AN URSU (Proceedings of the Academy of Sciences Ukraine SSR) B, No 11, 1972, pp 1020-1022, 1054 (Ukrainian; resume, Russian and English) (From Referativnyy Zhurnal -- Khimiya, No 7, 1973, Abstract No 7L420)

Translation: Results are reported for a study of the electrical conductivity of aluminophosphate alloys containing  $V_2O_5$  and  $Cr_2O_3$  as a function of their oxide concentration and temperature. The nature of the conductivity and polarization characteristics of the alloys was examined.

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Computers: Analog

USSR

LYUBARSKIY, YU. YA., All-Union Scientific Research Institute of Electric Power Engineering

"Data Input and Storage Device for Analog Computers"

USSR Author's Certificate No 378870, Cl. G 06g 7/04; G 11c 27/00, filed 21 Jun 71, published 18 Apr 73 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 19, 1973, p 129)

**Abstract** The device contains a cyclic-access digital memory unit, an address unit, output operational adder amplifiers, and a matrix memory circuit. The distinctive feature is that, to increase the data input speed and storage space, the outputs of the digital memory unit are connected to the bit inputs of the matrix memory circuit, the working inputs of the cells of each matrix column are connected to the corresponding outputs of the analog signal sources, the first address inputs of the cells of each matrix column are connected to the corresponding outputs of the first group of outputs of the address unit; the second group of outputs of the latter is connected to second address inputs of the cells of each matrix row, and the outputs of the matrix

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USSR

LYUBARSKIY, YU. YA., USSR Author's Certificate No 378870

memory circuit are connected to the inputs of the corresponding operational adder amplifiers.

In another version of the device, the distinctive feature is that the cells of the matrix memory circuit use diodes, diode keys, a transformer, capacitors, and weight resistors. The address inputs of the cells are connected to taps of the transformer's primary winding: the first directly, the second through a forward diode. The bit inputs of the matrix memory circuit are connected to some of the secondary winding taps of the transformer, with the other taps connected through the corresponding backward diode to a capacitor and series-connected diode keys. The outputs of the latter are connected to the corresponding output of the matrix memory circuit, and the anodes of the diode keys of each cell are connected through the weight resistors to the corresponding working input of the matrix memory circuit.

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1/2 016 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--A MODIFIED METHOD OF DIAGNOSING LEPTOSPIROSIS IN SWINE -U-  
AUTHOR-(02)-LYUBASHENKO, S.YA., ZAYCHENKO, A.S.  
COUNTRY OF INFO--USSR  
SOURCE--VETERINARIYA, 1970, NR 2, PP 98-100  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--LEPTOSPIROSIS, HOG, COMPLEMENT FIXATION TEST, DIAGNOSTIC  
MEDICINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3003/1230 STEP NO--UR/0346/70/000/002/0098/0100  
CIRC ACCESSION NO--AP0130240  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

2/2 016

CIRC ACCESSION NO--AP0130240

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. A NEW METHOD FOR DIAGNOSING LEPTOSPIROSIS OF SWINE IS BASED ON THE PROLONGED COMPLEMENT FIXATION REACTION WITH SWINE SERUM SINGLE ANTIGENS OR POLYANTIGEN. A POLYANTIGEN CONTAINING SEROTYPES L. GRIPPOTYPHOSA, L. POMONA, L. ICTERHAEMORRHAGIAE, L. TARASSOVI, L. HEBDOMADIS, AND L. BATAVIAE WAS SPECIFIC IN THE PROLONGED COMPLEMENT FIXATION REACTION AND DID NOT SHOW ANTICOMPLEMENT PROPERTIES IN A DOUBLE TITRATED DOSE. A TOTAL OF 4.9 PERCENT MORE POSITIVE AND DOUBTFUL REACTIONS AMONG ANIMALS WERE DETECTED BY THIS METHOD THAN WITH THE STANDARD COMPLEMENT FIXATION TEST. THE PROLONGED COMPLEMENT FIXATION TEST WAS ALSO BETTER FOR DIFFERENTIAL DIAGNOSIS OF ANIMALS WITH LEPTOSPIROSIS FROM ANIMALS CONVALESCING FROM THE DISEASE THAN THE COMMONLY EMPLOYED MICROAGGLUTINATION AND LYSIS TEST.

FACILITY: MOSCOW TECHNOLOGICAL INSTITUTE OF THE MEAT AND DAIRY INDUSTRY.

UNCLASSIFIED

LYUBASHEVSKIY, G.S.

math

CYBERNETIC METHOD OF STUDYING VIBRATION ACOUSTICAL CHARACTERISTICS OF COMPLEX STRUCTURES

B. D. Zaitsevskiy and G. S. Lyubashevskiy (Moscow)

The essence of an algorithm which minimizes a set of measurements [1] consists of calculation of the most suitable increment for the argument (from a finite series of discrete values accepted) for the next single measurement based on information already accumulated in digital computer storage concerning behavior of the relation being studied. As a result, the density of points of measurement becomes uneven: it increases near sectors of high information value--extremes--and decreases between them.

The effectiveness of the algorithm with variable step in the change of the argument depends, of course, on the class of dependence being studied. Machine modeling of an algorithm as applicable to the frequency response of an oscillating link with one degree of freedom in the audio frequency range with optimally selected control parameters included in the algorithm indicated that

1) Reduction of the measurement time (number of measurements) using this algorithm in comparison with equidistant division of the argument with equal accuracy of the search for the extreme is

$$B = \sqrt{\frac{10}{\pi}} \left( 10 + \frac{10}{\pi} \right)^{-1} \sqrt{50\pi}$$

where  $B$  is the number of terms in the series of discrete values of the increment of the argument,  $Q$  is the figure of merit of the object being studied,  $4 \cdot 10^3$  is the ratio of the extreme value of the function to the zone of insensitivity, below which values of the function are not of interest and are not used in calculation,  $1 \leq \pi$  is the quality parameter included in the algorithm,

2) The reduction in measurement time using the algorithm suggested in comparison to a continuous linear change in frequency with conditions of equal accuracy of search for the extreme value of the function is

$$B = \frac{1}{\pi + \frac{1}{\pi}} \cdot \frac{f}{\Delta f} \cdot \frac{1}{\sqrt{Q}} \cdot \frac{1}{\sqrt{10}}$$

where  $\Delta f$  is the width of the transmission band of the analyzing channel,  $\gamma$  is the range of change of frequency,  $\delta$  is the fixed error in search for the extremum. Furthermore, when reproducing functions according to the algorithm suggested, the displacement of the extrema by frequency and its expansion, arising with a continuous change in frequency, are eliminated in principle.

Thus, for example, where  $\varepsilon = \pi$ ,  $\Delta f = 1/3$ ,  $Q = 23$ ,  $F = 2 \cdot 10^4$ ,  $\delta = 5 \cdot 10^{-2}$ ,  $\gamma = 10$ , the gain in time  $\eta = 10^4$ , which indicates the high effectiveness of the algorithm, particularly for a high-Q system with a narrow transmission band in the analyzing channel. As the number of extremal maxima  $q$  is increased, the effectiveness of the algorithm decreases approximately in the ratio of

$$2q + 1.$$

#### REFERENCES

1. Zaslavskiy, G. S., Yu. I. Matveyev and B. D. Tarasishchik, *Tr. of Institute of Acoustics, USSR Academy of Sciences*, No. 14, Moscow, 1968.

USSR

UDC 624.012.236:725.36

BOLTYANSKIY, Ye. Z., Chief Departmental Specialist, Central Scientific Research Institute of Industrial Grain Planning, ~~INTERAUKRAS~~ Ye. N., Chief of the Mechanization Administration, Central Elevator Construction Trust

"An Experimental Silo Structure With Silos 6 Meters in Diameter"

Moscow, Beton i Zhelezobeton (Concrete and Reinforced Concrete), No 9, September 1971, pp 17-18

Abstract: At the flour combine imeni A. D. Tsypura in Moscow, designed by the Central Scientific Research Institute of Industrial Grain Planning, has been built an experimental silo structure 30,000 tons in capacity, with walls of prefabricated prestressed curvilinear elements. The silo walls were developed on the basis of proposals by the Main Administration of Specialized Elevator Construction of the Ministry of Agricultural Construction, RCPSR. In calculating the rings with respect to strength and crack resistance, a procedure was adopted which takes into account not only the horizontal stretching forces, as recommended by the standards, but also the conditional bending moment. Information is presented on the technology of production of the elements, the consolidated assembly of the rings, and erection of the silo structure. Working in two shifts, the rate of erection comprised 24 rings per day. 5 figures 2 tables.

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1/2 024  
UNCLASSIFIED  
PROCESSING DATE—30OCT70  
TITLE—SOME RESULTS OF STUDY OF ORGANIZATION OF HELMINTHIC DISEASES  
CONTROL IN ROVNO AND CHERNOVTSY REGIONS OF THE UKRAINIAN SSR —U—  
AUTHOR—(05)—SHULMAN, YE.S., VOLOSYUK, V.P., ZHELOMUB, I.YA., LYUBAVINA,  
M.G., LEVCHENKO, I.F.  
COUNTRY OF INFO—USSR  
SOURCE—MEDITSINSKAYA PARAZITOLOGIYA I PARAZITARNYYE BOLENI, 1970, VOL  
39, NR 3, PP 356-359  
DATE PUBLISHED—70

SUBJECT AREAS—BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS—PARASITIC DISEASE, DISEASE CONTROL, INTESTINAL DISEASE

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED  
PROXY REEL/FAME—2000/0224

STEP NO—UR/0358/70/039/003/0356/0359

CIRC ACCESSION NO—AP0123987

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--30OCT70  
 CIRC ACCESSION NO--AP0123987  
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIENCE OF ORGANIZATION OF  
 HELMINTHIC DISEASES CONTROL IN THE ROVNO AND CHERNOVTSY REGIONS OF THE  
 UKRAINIAN SSR WAS STUDIED. STATE SANITARY CONTROL OF THE SANITARY  
 CONDITIONS IN RURAL COMMUNITIES IS WELL ORGANIZED, OWING TO WHICH AND TO  
 REGULAR DEHELMINTHIZATION MEASURES THE INFESTATION RATE OF ASCARIASIS  
 HAS BEEN REDUCED CONSIDERABLY IN A NUMBER OF AREAS. HELMINTHIC DISEASE  
 CONTROL MEASURES ARE PLANNED FOR EACH SETTLEMENT. A CONSIDERABLE ROLE  
 IN THEIR ORGANIZATION IN THE VILLAGE BELONGS TO SANITARY FELDsher OF THE  
 DISTRICT HOSPITAL. A NUMBER OF METHODS FOR BETTER ORGANIZATION OF  
 HELMINTHIC DISEASES CONTROL. PARTICIPATION OF RURAL COUNCILS IN  
 REALIZATION OF SANITARY MEASURES, GREATER ENLISTING COOPERATION OF RURAL  
 MEDICAL WORKERS AND PUBLIC SANITARY WORKERS IN CONTROL OF SANITARY  
 CONDITIONS ESPECIALLY OF DESINFECTION OF FECAL FERTILIZERS, COMBINATION  
 OF HELMINTHIC DISEASE CONTROL MEASURES AND MEASURES FOR CONTROL OF  
 ENTERIC INFECTIONS, ETC. FACILITY: INSTITUT MEDITSINSKOY  
 PARAZITOLOGII I TROPICHESKOY MEDITSINY IM. MARTSINOVSKOGO.  
 FACILITY: KIEVSKIY INSTITUT EPIDEMIOLOGII, MIKROBIOLOGII I  
 PARAZITOLOGII. FACILITY: ROVENSKAYA OBLASTNAYA I GORODSKAYA  
 SANITARNO EPIDEMIOLOGICHESKIYE STANTSII.

UNCLASSIFIED



AA0040671

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 1-76

26279 WELD CRACKING TESTING involves remelting the weld by a method where on a square cross-section metal bar cuts are made on each of three edges to a different depth along the full length of the bar, the cuts are welded and then melted. An assessment by comparison establishes the cracking tendency. 17.6.67 as 165396/25-28. K.V.L. MACHINE CONSTRUCTION TECHNOLOGY RES. INST. (1.9.69.) Bul 14/18.4.69. Class 42k. Int.Cl.G 01n.

AUTHORS: Lyubavskiy, K. V.; L'kova, Ye. P.; and Kleybanova, Zh. P.  
Isentral'nyy Nauchno - Issledovatel'skiy Institut  
Tekhnologii Mashinostroyeniya

19750271

USSR

UDC 621.791.001.5:669.15

TARNOVSKIY, A. I., Engineer, and LYUBAVSKIY, K. V., Doctor of Technical Sciences,  
Central Scientific Research Institute of Technology and Machine Building

"Features in the Formation of the Structure in the Weld-Adjacent Zone of  
Austenitic Steels"

Moscow, Svarochnoye Proizvodstvo, No 3, Mar 70, pp 8-10

Abstract: The process of the formation of the structure in the weld-adjacent zone is considered. A study is made of the connection between the tendency of forged austenitic steels and alloys to form hot cracks in the weld-adjacent zone and the nature of the structures formed during welding in this section. Metallographic examination of the weld-adjacent zones of Kh18N9 and Kh18N12T welded steel alloys, which are weakly disposed to the formation of cracks, and of high-temperature steels, which are susceptible to hot crack formation near weld zone, revealed the following types of structures: 1) structures with traces of plastic deformation in the form of displacement lines and twins were observed in the weld-adjacent zone in austenitic steels with a lesser tendency to crack formation; 2) structures in the weld-adjacent zone of heat-resistant steels susceptible to crack formation are characterized by the absence of plastic deformation traces

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USSR

TARNOVSKIY, A. I., et al, Svarochnoye Proizvodstvo, No 3, Mar 70, pp 8-10

and by the presence of double boundary systems, one of which is etched in the form of sharp lines which blend with grain boundaries of the welding metal, while the other is in the form of bright weakly etched grooves which sometimes coincide with sharp boundaries. An analysis of the available data and the results of the metallographic examination confirm the reiterative formation of a system of sharp etching boundaries observed in the weld-adjacent zones of welded alloys. Moreover, the boundaries etched in the form of bright grooves are apparently the traces of grain boundaries formed as a result of recrystallization processes during heating, then disintegrating as a result of an increase in the diffusion process intensity at close to subsolidus temperature. The results confirm that the lower boundary of the temperature interval of the liquid metal is below the boundary of the real solidus. Orig. art. has: 6 figures and 15 references.

2/2

1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--PECULIARITIES OF THE FORMATION OF THE AROUND THE WELD ZONE  
STRUCTURE OF AUSTENITIC STEELS -U-  
AUTHOR--(02)-TARNOVSKIY, A.I., LYUBAVSKIY, K.V.  
COUNTRY OF INFO--USSR  
SOURCE--MOSCOW, SVAROCHNOYE PROIZVODSTVO, NO 3, 1970, PP 8-10  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--AUSTENITIC STEEL, WELD JOINT CRACKING, BIBLIOGRAPHY, WELD ZONE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1999/1301 STEP NO--UR/0135/70/000/003/0008/0010  
CIRC ACCESSION NO--AP0123260  
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123260

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROCESS OF THE FORMATION OF THE AROUND THE WELD STRUCTURE DURING WELDING WAS EXAMINED. A CONNECTION WAS SHOWN BETWEEN THE CHARACTER OF THE STRUCTURE BEING FORMED DURING WELDING IN THE AROUND THE WELD ZONE AND THE RESISTANCE OF ALLOYS TO THE FORMATION OF HOT AROUND THE WELD CRACKS.

UNCLASSIFIED

Optical

UDC 621.378.325

USSR

ZHARKOV, A. P., KAMACH, YU. E., KOZLOVSKIY, YE. N., ~~KUBAVSKIY~~,  
YU. V., OVCHINNIKOV, V. M.

"The OGM-20 Monopulse Laser"

Leningrad, Optiko-mekhanicheskaya Promyshlennost', No 9, Sep 70,  
pp 30-34

Abstract: The authors describe the circuits and give the principal characteristics of a ruby monopulse laser in which the Q of the resonator is modulated by use of the linear electrooptic effect in potassium dihydrophosphate crystals. The OGM-20 is the first industrial model of a monopulse laser designed for jobs requiring brief high-power light pulses. The unit can be used to study the interaction between radiation and matter both in microvolumes with the use of special focusing lenses, and on the macroscopic scale in optically transparent media with the use of a telescopic system. An IFP-800 xenon tube is used for pumping. The instrument emits on a wavelength of  $649.3 \mu$  with a prf of 1 Hz, pulse emission power is  $2 \cdot 10^7$  watts, the duration of a

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USSR

ZHARKOV, A. P., et al, Optiko-mekhanicheskaya Promyshlennost',  
No 9, Sep 70, pp 30-34

pulse at one-half maximum intensity is  $2 \cdot 10^{-8}$  second, the angle of beam divergence at one-half maximum intensity without the telescope is  $10'$ , the laser head itself measures  $140 \times 840 \times 440$  mm, and the power supply and control unit measures  $523 \times 530 \times 985$  mm. The instrument is water-cooled and is designed for operation in a temperature range of  $5-35^{\circ}\text{C}$  at a relative humidity of less than 90 percent.

2/2

- 118 -

1/2 030 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--MICRODISTRIBUTION OF YTTRIUM BETWEEN PHASE AND STRUCTURAL  
COMPONENTS OF CAST IRON -U-  
AUTHOR-(03)-BALAN, L.N., LYUBCHENKO, A.P., MOZHAROV, M.V.  
COUNTRY OF INFO--USSR  
SOURCE--LITEINOE PROIZVOU. 1970, (4), 42-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--PHASE ANALYSIS, CAST IRON, YTTRIUM, GRAPHITE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3004/1931 STEP NO--UR/0128/70/000/004/0042/0044  
CIRC ACCESSION NO--AP0132192

UNCLASSIFIED



2/2 030

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0132192

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EMPLOYED METHODS ARE DESCRIBED BY I. L. MIRKIN ET AL. (1958), AND BY YU. N. TARAN (1959). THE  $\gamma$  ADONS. WERE VARIED 0.005-0.84PERCENT; THE GLOBULIZATION OF GRAPHITE WAS PRODUCED ONLY AT  $\gamma$  0.17-0.20PERCENT, WHILE AT  $\gamma$  EQUALS 0.30PERCENT PROGRESSIVE DEGLOBULIZATION OCCURRED. THE MICRODISTRIBUTION OF  $\gamma$  VARIED WITH THE RESIDUAL  $\gamma$  CONCN. IN THE CAST IRON: AT 0.01-0.005PERCENT  $\gamma$ , IT IS LOCALIZED CLOSE TO THE COARSE PLATES OF PRIMARY GRAPHITE. AT OPTIMAL  $\gamma$  CONCN. (0.21PERCENT) INCREASED  $\gamma$  CONCMS. ARE PRESENT CLOSE TO GLOBULAR GRAPHITE 0.17-0.25PERCENT, AT BOUNDARIES OF FERRITE (0.16-0.24PERCENT) AND IN PEARLITE ALONG THE BOUNDARIES OF AUSTENITE GRAPHITE EUTECTIC COLONIES (0.27-0.47PERCENT). WITH 0.30PERCENT  $\gamma$  IN CAST IRON THE  $\gamma$  IS LOCALIZED ALONG THE BOUNDARIES OF THE PRIMARY AUSTENITE (0.46-0.80PERCENT). THE FORMATION OF CHEM. COMPOS. RICH IN  $\gamma$  (LIKE  $Fe_{30}C_{70}$ ) WAS DETD.; THESE ARE HELD RESPONSIBLE FOR THE LOWERING OF THE CONCN. OF  $\gamma$  ATOMS WITHIN THE MELT.

UNCLASSIFIED

USSR

UDC: 577.4

LYUBCHENKO, G. G., PODLIPENSKIY, V. S.

"Normal Single-Valued Binary Tables and an Algebra for Transforming Them"

Priboiy i sistemy avtomatiki. Resp. mezhved. nauch.-tekhn. sb. (Automation Devices and Systems. Republic Interdepartmental Scientific and Technical Collection), 1971, vyp. 20, pp 79-84 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V354)

[No abstract]

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- 13 -

USSR

UDC: 577.4

LYUBCHENKO, G. G., PODLIPENSKIY, V. S.

"Concerning Incomplete Tables of Functions of the Algebra of Logic, and One of Their Applications in Automation"

Pribory i sistemy avtomatiki. Resp. mezhved. nauch.-tekhn. sb. (Automation Devices and Systems. Republic Interdepartmental Scientific and Technical Collection), 1971, vyp. 20, pp 74-79 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V355)

[No abstract]

1/1

1/2 041 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--SYNTHESIS AND STUDY OF NEW HEAT RESISTANT POLYMERS  
POLYBENZIMIDAZOPYRROLONES -U-  
AUTHOR--(03)-ZHUBANOV, B.A., LYUBCHENKO, N.P., RAFIKOV, S.R.  
COUNTRY OF INFO--USSR  
SOURCE--TR. INST. KHIM. NAUK. AKAD. NAUK KAZ. SSR 1970, 28, 118-22  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--MATERIALS, CHEMISTRY, PHYSICS  
  
TOPIC TAGS--ORGANIC SYNTHESIS, CONDENSATION REACTION, HEAT RESISTANT  
PLASTIC, POLYMER, BENZIMIDAZOLE, BENZENE, MALEIC ANHYDRIDE, UV LIGHT,  
PYRROLES, HETEROCCLIC NITROGEN COMPOUND, KETONE  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3005/0771 STEP NO--UR/0000/70/028/000/0118/0122  
CIRC ACCESSION NO--AT0132869

UNCLASSIFIED

2/2 041

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132869

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DIELS-ALDER CONDENSATION OF C  
SUB6 H SUB6 WITH MALEIC ANHYDRIDE IN THE PRESENCE OF PH SUB2 CO UNDER UV  
LIGHT IRRADN. GAVE I. ANALOGOUSLY STARTING WITH PHME, I 3-ME DERIV.  
(IA) WAS OBTAINED. THE CONDENSATION OF I WITH 3,3 PRIME  
DIAMINOBENZIDINE (II) IN HCONME SUB2 SOLN. GAVE THE CORRESPONDING  
POLYAMIDE, WHICH WAS CYCLIZED BY HEATING 3 HR AT 300DEGREES TO  
POLYBENZIMIDAZOPYRROLONES (III). ANALOGOUSLY, STARTING WITH IA THE  
CORRESPONDING III ANALOGS WERE PREPD. THESE POLYMERS WERE STABLE LESS  
THAN OR EQUAL TO 380DEGREES IN THE AIR. THE EFFECT OF THE MONOMER  
CONCN., POLYCONDENSATION TIME, AND TEMP. ON THE VISCOSITY OF THE  
POLYMERS WAS STUDIED.

UNCLASSIFIED

USSR

UDC 681.846.73

ZVOLINSKIY, V. M., LYUBCHENKO, O. M., LUSHCHIKHIN, YU. A.

"Magnetic Recording and Reproduction Device"

USSR Author's Certificate No 310297, filed 13 Mar 70, published 24 Sep 71 (from  
RZh --Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72,  
Abstract No 4A533P)

Translation: A magnetic recording and reproduction device is proposed which contains a drive shaft, coils, and an analyzer in the form of a drum with magnetic heads attached to it. In order to achieve the minimum and uniform clearance between the tape and the drum, an air nozzle is installed above the turn of the tape encompassing the drum. This nozzle directs a stream of compressed air on the tape in the area where the drum surface moves under the tape. There is 1 illustration.

1/1

USSR

UDC: 53.07/.08+53.001.5

LYUBCHIK, Ya. G.

"Focusing and Aberration Properties of Quadrupole-Octupole Systems. Description of the FAS-48 Program"

Fokusiruyushcheye i aberratsionnyye svoystva kvadropol'no-oktupol'nykh sistem. Opisaniye programmy FAS-48. Fiz.-tekhn. in-t AN SSSR (cf. English above. Physicotechnical Institute, Academy of Sciences of the USSR), Preprint No 354, Leningrad, 1971, 31 pp, ill. (from RZh-Fizika, No 4, Apr 72, Abstract No 4A544)

Translation: A description of the FAS-48 program which enables determination of: a) first-order focusing properties of given systems namely, calculation of image conversion matrices after each element of the system, the focal lengths and positions of the principal planes of the system, and parameters of particle trajectories; b) parameters of the system -- excitation and effective lengths of quadrupole lenses or the lengths of free spaces; c) first-order focusing properties with regard to the chromatic scatter of trajectories; d) third-order spherical aberration of the system of quadrupole, octupole, and quadrupole-octupole lenses, and also conditions

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USSR

LYUBCHIK, Ya. G., Fokusiruyushcheye i aberratsionnyye svoystva kvadropol'no-oktupol'nykh sistem. Opisaniye programmy FAS-48. Fiz.-tekh. in-t AN SSSR, Preprint No 354, Leningrad, 1971

for correction of aberration. The FAS-48 program is written in BESM-4 computer code and is accommodated in two immediate-access magnetic memories and on magnetic drum No 1. The time for calculating a single variant is 5-30 seconds, and up to two minutes with printout. V. Gapanovich.

2/2

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USSR

UDC 537.533.331

LYUBCHIK, Ya. G., MOKHNATKIN, A. V., Candidate of Sciences, CHENTSOV, Yu. V.,  
Doctor of Sciences and YAVOR, S. Ya.

"Electron-Optical System of Nonaxisymmetrical Elements for Building a  
Microprobe"

Leningrad, Optiko-mekhanicheskaya promyshlennost' No 11, Nov 71, pp 7-9

Abstract: The use of nonaxisymmetrical elements such as quadrupoles and octupoles for correction of spherical aberration in microprobe systems is suggested. A model of a triplet consisting of four similar five-electrode electrostatic quadrupole-octupole lenses is described. The small excitation regimes and a part of strong excitation regimes of quadrupoles (up to  $V = 3-3.5$  kv) were experimentally investigated at magnification ratio not higher than  $1/3$ . Coefficients of linear magnification were determined using a fine mesh screen as an electron-optical object. The excitation values and coefficients of linear magnification obtained experimentally and by computation on a BESM-4 computer, presented in graphs, show good agreement.

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USSR

UDC 621.385.832.002.237

LYUBCHIK, Ya. G., SAVINA, N. V., FITKOVA, T. Ya., SHKUNOV, V. A.

"Improving the Sensitivity of Cathode-Ray Oscillographs by Using Electrostatic Quadrupole Lenses"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 10, Oct 71, pp 1941-1945

Abstract: It is experimentally and theoretically shown that a triplet of quadrupole lenses can be used as a system for focusing and after-deflection of the electron beam in an oscilloscope CRT. It is concluded on the basis of the data presented that the proposed method has promise for improving sensitivity. A further increase in the specific sensitivity of cathode-ray oscilloscopes can be achieved by eliminating the spherical aberrations of the quadrupole lenses. The tube design used in the experiment with electrostatic quadrupole lenses is slightly more complicated than that of the analogous tube with axial electrostatic lens, but is much simpler than a tube with a magnetic focusing system.

1/1

USSR

UDC 632.95.028

LYUBENKO, P. Kh.

"Toxicologic-Hygienic Properties of Phenkaptone"

Moscow, Zashchita Rasteniy, No 9, 1970, pp 32-33

Abstract: Phenkaptan -- 0,0-diethyl-S-(2,5-dichlorophenylthiomethyl)-dithio-phosphate -- is an almost colorless liquid; in agricultural application it is used as a 20% suspension. It is an active insectoacaricide. It is highly toxic, its LD<sub>50</sub> for rats being 86.5-107 mg/kg; this material shows no local irritation nor accumulative action. LD<sub>100</sub> for this agent is 1000 mg/kg for rats. Clinically phenkaptone resembles other phosphorus-organic intoxications, attacking CNS and depressing cholinesterase activity. This agent is not long lasting even in cold storage. A three-four week storage on the fruits breaks it down completely so that no residue could be found. It decomposes even on short thermal treatment. In concentrations of 0.8-1.0 mg/kg it imparts bitter taste to the fruit. The recommended application of this agent calls for 0.1-0.2% emulsion with a consumption of 0.8-1 kg per hectare to be sprayed not later than 20 days prior to fruit picking.

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UDC: 621.397.2

USSR

SEVAL'NEV, L. A. and LYUBENKO, V. F.

"Transmission of SEKAM Color Television Signals with Sound Accompaniment Through Satellite Communication Lines"

Moscow, Elektrosvyaz', No. 5, 1970, 46-49

Abstract: This article studies the various parameters involved in color and black-and-white television signal transmission over satellites. The basic peculiarity of transmissions over the "Molniya 1" sputnik is in the use of the joint method of transmitting image and sound. The essence of this method is that additional square pulses, modulated in width by the sound signal, are introduced into the line-blanking interval during retrace; at the receiver, these pulses are eliminated from the picture signal and the standard television signal form is restored. The article lists three requirements of color and black-and-white transmissions which were studied in connection with the "Orbit" network. These requirements are: the need for providing the condition of instantaneous compatibility -- i.e., that the transition from black-and-white to color require no switching in the sound equipment at the transmitter or receiver; the qualitative indices of the sound channel should vary only slightly during that transition; that the noise immunity of the picture synchronization channel remain the same for color as for black-and-white. A drawing of the signal used in the "Orbit"

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USSR

SEVAL'NEV, L. A., et al, Elektrosvyaz', No 5, 1970, pp 46-49

network for black-and-white transmissions and the signal used for the "Molniya 1" network are given; also shown are two oscillograms of the amplitude-frequency characteristics of the video amplifier strip used to improve the stability of the color channel at the transmitter, in Moscow. The authors draw the conclusion that the described method of combined picture and sound transmission provides the desired quality for both color and black-and-white.

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- 347 -

USSR

UDC: 532.526

LYUBENOV, V. I.

"Laminar Boundary Layer in a High Velocity Gas Flow"

Tr. Leningr. politekhn. in-ta (Works of the Leningrad Polytechnical Institute) No. 313, 1970, pp 35-44 (from RZh-Mekhanika, No. 8, Aug 70, Abstract No. 8B916)

Translation: The introduction of a system of shaping parameters  $\mu, f_1, f_2, f_3, \dots, f_n, \dots$  as independent variables of the equation of plane stationary movement of a compressible viscous fluid in a laminar boundary layer on an impermeable isothermic surface may lead to the universal form which does not explicitly contain the velocity on the outer boundary of the limiting layer and its derivatives along the longitudinal coordinate. This paper considers a numerical method of solving the universal equations of the limiting layer in the case when the derivatives with respect to  $f_1, f_2, f_3, \dots, f_n, \dots$  as well as  $f_2, f_3, \dots, f_n, \dots$  vanish, and  $f_1$  is kept as an ordinary parameter. The computations were made on the electronic computer BESM-2M. Bibliography of 10. Author's abstract.

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UDC: 629.78.015:532.526

USSR

LYUBENOV, V. I.

"Laminar Boundary Layer in a High-Velocity Gas Flow"

Tr. Leningr. politekhn. in-ta (Works of the Leningrad Polytechnical Institute), 1970, No 313, pp 35-44 (from RZh-Raketostroyeniye, No 8, Aug 70, Abstract No 8.41.78)

Translation: By introducing a system of form parameters  $x, f_1, f_2, f_3, \dots, f_n, \dots$  as independent variables, equations of two-dimensional steady-state motion of a compressible viscous fluid in a laminar boundary layer on an impermeable isothermal surface may be reduced to a universal form without explicit terms for the velocity on the outer boundary of the layer or its derivatives with respect to longitudinal coordinates. This paper discusses a numerical method of solving universal boundary layer equations in the case where the derivatives with respect to  $f_1, f_2, f_3, \dots, f_n$ , as well as  $f_2, f_3, \dots, f_n$  themselves are equal to zero, and  $f_1$  is retained as an ordinary parameter. The calculations were done on the BESM-2M digital computer. Four illustrations, one table, bibliography of ten titles. Resumé.

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USSR

UDC 532.526

LYUBENOV, V. Y.

"Two-Parametric Solution of the Equations of the Laminar Boundary Layer in a Gas"

Trudy Leningradskogo Politeknicheskogo Instituta, Aerotermodinamika  
(Works of the Leningrad Polytechnical Institute, Aerothermodynamics),  
No 313, 1970, pp 28-35

Translation: The proposed paper contains a study of the numerical method of solving all-purpose equations of a laminar boundary layer in a high-speed gas flow in the case where the parameters  $\alpha$  and  $f$ , and also the derivatives of the desired functions with respect to the indicated parameters enter into these equations.

The calculations are executed on the BESM-4 digital computer. There is 1 table, 3 illustrations and a 7-entry bibliography.

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UDC 532.526

USSR

LYUBENOV, V. Y.

"Laminar Boundary Layer in a High-Speed Gas Flow"

Trudy Leningradskogo Politekhnicheskogo Instituta, Aerotermodinamika  
(Works of the Leningrad Polytechnical Institute, Aerothermodynamics),  
No 313, 1970, pp 35-44

Translation: By introduction of a system of shape parameters  $\chi$ ,  $f_1$ ,  $f_2$ ,  $f_3$ , ...,  $f_n$ , ... as independent variables, the equations of two-dimensional stationary motion of a compressible viscous liquid in a laminar boundary layer on an impenetrable isothermal surface can be reduced to universal form not explicitly containing the velocity at the outside boundary of the boundary layer and its derivatives with respect to the longitudinal coordinate.

The proposed paper contains a study of the numerical method of solving the all-purpose equations of the boundary layer in the case where the derivatives with respect to  $f_1$ ,  $f_2$ ,  $f_3$ , ...,  $f_n$ , ... and  $f_2$ ,

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USSR

LYUBENOV, V. Y. Trudy Leningradskogo Politeknicheskogo Instituta, Aerotermodinamika (Works of the Leningrad Polytechnical Institute, Aerothermodynamics), No 313, p1970, pp 35-44

$f_3, \dots, f_n, \dots$  are equal to zero, and  $f_1$  stays in the role of an ordinary parameter.

The calculations were performed on the BESM-2M digital computer. There is 1 table, 4 illustrations and a 10-entry bibliography.

2/2

USSR.

UDC 621.317.39:531.758

1

RAZIN, K. A., Candidate of Technical Sciences, METLITSKIY, R. S., KABIN, Yu. Ya., LYUBESHKIN, V. P., AND MARTYNOVA, Ye. Ye., Engineers

"The Densimeter of the "Venera-5" and "Venera-6" Space Stations"

Pribery i Sistemy Upravleniya, No 10, 1971, pp 39-40.

Abstract: A description, drawing, block diagram, schematic diagram and photograph are presented of the densimeter used on the "Venera-5" and "Venera-6" spacecraft. The device is based on the method of measurement of gas density consisting in that a body is placed in motion in the medium whose density is to be measured and the aerodynamic resistance or drag of the gas, which is a function of density, is determined. In the vibration densimeter described, the moving bodies consisted of the arms of a continually excited tuning fork. The oscillating amplitude of the arms was inversely proportional to the aerodynamic drag, and the high Q of the tuning fork allowed good sensitivity of the device to be achieved. The device can measure densities from 0.5 to 45 kg/m<sup>3</sup> in the 0-350°C temperature interval with an error of not over ±10%. Its indications are independent of gas composition. Calibration of the densimeter is described. As the example of the operation of the densimeter, tables are presented of the measurement data produced from the "Venera-5" spacecraft as it descended on Venus.

1/1

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LYUBETSKAYA, L. S.

SPRS 55687  
120 Apr 1972

UDC 613.693-07:616-056.3-02:582.264.45-057

INVESTIGATIONS OF THE ALLERGENIC PROPERTIES OF CHLORELLA

(Article by Ya. I. Pukhova, Yu. N. Okladnikov and L. S. Lyubetskaya; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 6, No 1, pp 23-26, 1972, submitted for publication 28 December 1970)

**Abstract:** This paper presents the results of a study of the immunobiological status of man long sustained by a bioregenerative life support system. It is not impossible that under the conditions of a direct gas exchange between algal and bacterial biocenoses and man allergization and autoallergic processes may develop and specific and non-specific resistivity of the human body may change. During the prolonged experiment it was shown that the functioning of the hypophysis-adrenal cortex system was accelerated and the level of humoral factors responsible for specific and nonspecific immunity was increased. The test subject exhibited no C-protein or autoantibodies to vital organs and tissues. Special tests conducted for determining sensitization gave evidence of human tolerance to Chlorella and its gaseous metabolites when in contact via direct gas exchange and regenerated water. These data give support to the idea advanced earlier that man and Chlorella, that is, two basic components of the life support system, are biologically compatible. In other words, they may coexist in a closed biological life support system.

In the presence of gas exchange between a culture of algae and man in a pressurized cabin special environmental conditions are created which are characterized by an increased content of carbon dioxide and other gaseous metabolites of man and the culture of algae, the presence of singular associations of microorganisms, etc. (L. V. Kitenkiy, et al.).

This study was undertaken for the purpose of investigating the immunological reactivity of man long confined to a biological life support system. The unusual nature of the studied problem is that immunological body reactivity is examined in the presence of a close contact and interaction between man

USSR

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"Rhizosphere Microflora of Healthy Fine-Fibered Cotton and Plants Infected with Fusarium Wilt"

Ashkhabad, Izvestiya Akademii Nauk Turkmenkoy SSR, Seriya Biologicheskikh Nauk, No 1, 1970, pp 9-16

Abstract: Fusarium wilt alters the populations of some groups of microorganisms. It increases the number of nonsporeulating bacteria and ammonifiers, especially the cellulase-producing microorganisms in the rhizosphere of affected plants. The bacteria that stimulate fungus growth are most numerous in the early part of the growing season when the plants are most infested. The number of bacterial antagonists of the fungus in the early growing period is smaller than that of the bacterial stimulants, but it increases as the plants mature. The content of bacterial antagonists is higher in the rhizosphere of healthy plants, while the bacterial stimulants are more abundant in the rhizosphere of diseased plants.

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Heat Treatment

USSR

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AL'TGAUZEN, O. N., LYUBETSKAYA, O. V., BIRMAN, S. R., and ZAYTSEVA, G. A., Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin /TsNIICHERMET/

"Magnetic Properties of Iron-Nickel Alloys"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 4, 1972, pp 68-70

Abstract: A study has been made of the effect of final heat treating on both the structure and magnetic properties of 0.02-, 0.1-, and 0.2-mm thick strip of 79NM, 50N, and 50NP magnetically soft alloys operated in constant or variable fields at 50 to 9600 cps. The properties of these alloys in a constant magnetizing field are shown to be very sensitive to annealing temperatures within 900-1100°C and to cooling rates below 600°C from 0.4 to 17 deg/min. As the frequency is increased to 9600 cps, the sensitivity of the alloys to heat treating decreases. A decrease in annealing temperature may reduce the frequency dependence of the maximum permeability of the strip. In a variable magnetizing field, an increase in frequency makes the maximum permeability and specific losses of the strip less sensitive to changes in cooling rates from 2 to 17 deg/min.

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ABSTRACT. THE FUSARIAL WILT DISEASE OF COTTON INFLUENCES GREATLY UPON THE QUANTITATIVE COMPOSITION OF PARTICULAR GROUPS OF MICROORGANISMS OF RHIZOSPHERE. IN RADICAL SOIL OF INFECTED PLANTS THE CONTENT OF NONSPORRAN AMMONIATED AND CELLULOSE DESTRUCTIVE MICROORGANISMS INCREASES. MICROFLORA OF COTTON RHIZOSPHERE IS VERY SUSCEPTIBLE TO PATHOGENIC FUNGUS. THE CONTENT OF BACTERIA ANTAGONISTS IS HIGHER IN RADICAL SOIL OF NONINFECTED PLANTS WHILE IN CASE WITH INFECTED PLANTS BACTERIA SUMULATORS DEVELOP MORE ACTIVELY.

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LYUBETSKAYA, O. S.

"Effect of Cultivation Conditions on the Biological Activity of Bacterial Antagonists and Bacterial Growth Stimulants of the Fungus *Fusarium oxysporum* f. *vasinfectum* (Atk.) Bilal"

Ashkhabad, Izvestiya Akademii Nauk Turkmenskoy SSR, Seriya Biologicheskikh Nauk, No 2, 1970, pp 81-86

Abstract: The source of nitrogen nutrition is an important factor in the activity of the bacterial antagonists (*Ps. radiobacter*, *Cl. polymyxa*, *Bac. subtilis*, *Bac. mesentericus*) and bacterial stimulants (*Ps. liquifaciens*, *Bac. intermedius*, *Ps. Scissa*, *Bac. Aerogenes*, *Bac. petasites*, *Bac. amarificans*) of the pathogenic fungus *Fusarium oxysporum*. Nitrate nitrogen and the nitrogen organic compounds promote good growth and stimulate the synthesis of active substances. Organic fertilizer nitrogen appears to stimulate the greatest activity of the bacterial antagonists in soil. The simple sugars, glucose and sucrose, are the most available form of carbohydrate for rhizosphere microorganisms. An increase in the content of the

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LYUBETSKAYA, O. S. Ashkhabad, Izvestiya Akademii Nauk Turkmenskoy SSR, Seriya Biologicheskikh Nauk, No 2, 1970, pp 81-86

sugars in the medium increases bacterial activity. Both the antagonists and the stimulants are most active at neutral and weakly alkaline pH (7.0-7.5). A shift in the pH beyond the optimal values partly inhibits their activity.

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USSR

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NIKOLOV, S. KH., LYUBETSKIY, KH. Z., BARSEL'YANTS, G. B., ZABELIN, A. A., NEFELOV, P. V., ONOPCHENKO, N. V., CHURSINA, M. A., YEREMIN, V. M., TRENSUK, R. A.

"Toxicologic Estimate of the New Organophosphorus Pesticide Bitex"

V sb. Vliyanie ul'trazvuka, yadokhnik, i drugikh faktorov sredy na organizm cheloveka i pishch. produkty (Effect of Ultrasound, Poisons and other Factors of the Environment on the Organism of Man and Food Products -- collection of works), Krasnodar, 1971, pp 85-91 (from RZh-Farmakologiya. Khimioterapevticheskiye sredstva. Toksikologiya, No 2, Feb 72, Abstract No 2.54.773)

Translation: Rats were injected intraventricularly with bitex (an organophosphorus pesticide; I: contains 50% active principle) dissolved in water (1 ml) in doses of 100, 200, 300, 400, 500, 600, 700 and 800 mg/kg, and they were observed for 3 weeks. With a dose of 100-200 mg/kg, the activity of the cholinesterase dropped by 2-3 times during the first 1-2 days, and it began to recover after 7-11 days. The dose of 100 mg/kg was taken as the minimum toxic dose. For doses of 300 mg/kg and higher, sluggishness, increased frequency of urination, diarrhea, contraction of the pupils, tears, paresis of the extremities, a drop in body temperature of 1-5°, an increase in the sedimentation rate, leucocytosis, neutrophilia and a reduction in the cholinesterase activity by 3-15 times were noted. The  $DL_{100}$  of I is 800 mg/kg, the  $DL_{50}$  is 384.6

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NIKOLGV, S. KH., et al., Vliyaniye ul'trazvuka, yadokhimik. i drugikh faktorov sredy na organizm cheloveka i pishch. produkty, Krasnodar, 1971, pp 85-91

(491.8-277.4 mg/kg). For rabbits (I was injected in doses of 25-200 mg/kg) the  $DL_{50}$  was calculated on the level of 82 (11.67-47.3) mg/kg. The pathomorphological changes in rabbits were characterized by circulatory disorders and dystrophy. USSR. Krasnodar, Medical Institute.

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